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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,391	08/04/2006	Shahram Mihan	LU 6160 (US)	8380
24114	7590	07/09/2010	EXAMINER	
LyondellBasell Industries 3801 WEST CHESTER PIKE NEWTOWN SQUARE, PA 19073			DARJI, PRITESH D	
			ART UNIT	PAPER NUMBER
			1793	
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			07/09/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,391	<b>Applicant(s)</b> MIHAN ET AL.	
	<b>Examiner</b> PRITESH DARJI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 32-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 32,33,40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 32 and 40 recite the limitation "the particle" and "the particles". There is insufficient antecedent basis for this limitation in the claim.

In claim 33, line 4, "thermal activation... neutral" is indefinite with regards to use of "and/or".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 32-36, 38-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth'898 in view of Fottinger (US 2002/0095014) and in further view of Mihan (US 6,469,111).

Derleth teaches the hydrogel obtained by any suitable known means. See column 2, lines 27-28. The suspension is obtained by grinding the hydrogel in the presence of water. See column 2, lines 42-45. Grinding the hydrogel step shows milling of hydrogel. The grinding of hydrogel will make particulate hydrogel. To produce particulate hydrogel slurry, Derleth teaches the quantity of water added is equal to at least 5% of the weight of hydrogel. See column 2, lines 52-55. In addition Derleth teaches use of steam under conditions controlled to prevent complete drying of atomization of hydrogel particulate slurry. See column 2, lines 63-65. Furthermore, the reference suggests chromium is contained in catalysts for use in polymerization. See column 4, lines 57-60. Regarding size of hydrogel, Derleth teaches that controlled grinding is used to obtain hydrogel size less than 50 micrometers (e.g. between 5 and 50 micrometers), which overlaps instantly claimed hydrogel particle sizes. Additionally, it is possible to use a chromium compound preferably chosen from the soluble salts, such as oxides, acetate, chloride, sulphate, chromate and bichromate in the aqueous solution. See column 4, lines 65-67 and column 5, lines 1-5. Derleth uses silicon and titanium oxides as catalyst support for the polymerization of alpha-olefins. See column 4, lines 20-23. Derleth teaches that during polymerization drying is carried out in air, for example fluidized bed. See column 3, lines 36-40. Furthermore, use of fluidized bed reactor is stated in example 1. Polymerization of alpha-olefins is taking place in presence of chromium containing supported catalyst. See column 1, lines 13-15. Polymerized olefin can be also called fiber of olefin. The chromium compound present in a catalyst is in a proportion preferably from 0.1 to 5% and more particularly from 0.25

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to 2% by weight. See column 5, lines 10-13. The chromium compound's weight percent ranges overlaps instantly claimed ranges.

Derleth does not teach particle size of hydrogel less than 3  $\mu\text{m}$ .

Fottinger teaches diameter (size) of silica hydrogel from 1  $\mu\text{m}$  to 10  $\mu\text{m}$ , which overlaps instantly claimed range. See [0027].

It would have been obvious for a person with the ordinary skills in the art at the time of the invention to use process of Derleth using smaller size of hydrogel particles in view of Fottinger to have a positive effect on the diffusion-controlled supply of monomers and co-catalysts to the catalyst and thus also on the polymerization kinetics.

Regarding hydrogel particle sizes and weight percent ranges, the reference size and weight percent range that overlap the claimed ranges and considering the claimed ranges as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.C.P.Q.549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

Claims 33-36, 38-39 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth'898 in view of Fottinger (US 2002/0095014) and in further view of Mihan (US 6,469,111).

Derleth and Fottinger do not teach thermal activation in the range from 450°C to 900°C and they do not teach particle size diameters of catalyst.

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However, in a process to polymerize olefins, Mihan teaches calcination of dry catalyst precursor for activation at from 400°C to 1100°C in a fluidized bed reactor. See column 3, lines 40-43. The temperature range taught by Mihan overlaps the temperature range of instantly claimed invention. Calcination used by Mihan is thermal activation. Mihan teaches calcination is carried out in the presence of fluorine compounds as a result of which the catalyst surface is modified with fluorine atoms. See column 3, lines 45-50. Mihan teaches mean particle diameters are from 10 to 200 micrometers. See col.2, lines 47-54.

It would have been obvious for a person with ordinary skill in the art at the time of invention to use Derleth and Fottinger's catalyst having the activated temperature range in view of Mihan because using this temperature a catalyst will be thermally activated thus providing predictable result of functioning catalyst for the similar purpose.

Regarding claims 34 and 42, any difference imparted by product by process limitations would have been obvious to one having ordinary skill in the art at the time of the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685, *In re Fessmann*, 180 USPQ 324, *In re Spada*, 15 USPQ2d 1655, *In re Fitzgerald*, 205 USPQ 594 and MPEP 2113.

Claims 37, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derleth, Fottinger and Mihan in view of Hlatky'157.

Derleth, Fottinger and Mihan do not teach organometallic compound for activation comprises aluminum.

However, in a process of catalyst system of enhanced productivity, Hlatky teaches alumoxane as an activating compound used to produce variety of polymers (see column 1, lines 45-55).

At the time of invention it would have been obvious to a person of ordinary skill in the art to perform the process of Derleth and Fottinger using alumoxane as activator compound in view of Hlatky. The suggestion or motivation for doing so would have been metallocene-alumoxane possesses high activity and are more versatile than conventional Ziegler-Natta type catalysts and they may be effectively used to produce a variety of polymer products. In view of this, the skilled artisan would have appreciated the concept of using this material to improve catalyst performance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 34, 35 and 42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Derleth'898.

Regarding claims 34, 35 and 42, Derleth teaches polymerization of alpha-olefins is taking place in presence of chromium containing supported catalyst. See column 1, lines 13-15.

Any difference imparted by product by process limitations would have been obvious to one having ordinary skill in the art at the time of the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685, *In re Fessmann*, 180 USPQ 324, *In re Spada*, 15 USPQ2d 1655, *In re Fitzgerald*, 205 USPQ 594 and MPEP 2113.

### ***Response to Arguments***

Applicant's arguments filed 4/12/2010 have been fully considered but they are not persuasive.

Applicant argues that Fottinger's disclosure is limited to Ziegler-Natta catalysts, which utilize a Ti or V catalyst and organometallic compound as a co-catalyst. A Ziegler-Natta catalyst will not necessarily work well with a Cr catalyst.

However "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ



385, 389 (Fed. Cir. 1983). It is unclear how Ziegler-Natta catalyst will not work well with a Cr catalyst. Furthermore Derleth shows Cr in the catalyst.

Applicant argues that Ziegler-Natta catalysts are typically supported on small particle size supports, while Cr catalysts normally need to be activated in fluidized bed reactors, and this requires larger particles to avoid ejection from the reactor.

However this contradicts applicant's own invention since applicant is claiming smaller particles.

Applicant argues that milling the hydrogel to provide a particle size distribution within the claimed range provides unexpected and valuable advantages. These results are not obvious from the combined teachings of Derleth and Fottinger.

However, according to the claim language, Derleth and Fottinger make instant invention obvious. For example, Fottinger teaches mean particle diameter of silica gel from 1 to 5  $\mu\text{m}$ . See Fottinger [0027]. It means that all particles (100%) are from 1 to 5  $\mu\text{m}$ . Instant claim 1 it is stated "at least 75% by volume of the particles" have a particle size in the range from 0 to 35  $\mu\text{m}$ . Instant claim language is obvious over Fottinger which requires 100% particles from 1-5  $\mu\text{m}$ . If particles are 2  $\mu\text{m}$ , it meets all claimed distribution sizes.

Applicant argues that the combined teachings of Derleth and Fottinger fail to predict the outcome of any experiment with metallocene catalysts because neither Derleth nor Fottinger uses metallocene catalyst.

However, it is unclear how Derleth and Fottinger do not teach metallocene catalysts. Derleth teaches chromium is contained in catalysts for use in polymerization.

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See Derleth, column 4, lines 57-60. According to applicant, chromium is metallocene compound so it is unclear how Derleth and Fottinger do not teach metallocene catalyst.

Applicant argues that none of Hlatky or Mihan provides specific enough information to suggest finely particulate hydrogel having the instantly claimed particle size distribution.

However as explained in the action and arguments above the instantly claimed particle size distribution is obvious over Derleth in view of Fottinger.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PRITESH DARJI whose telephone number is (571)270-

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5855. The examiner can normally be reached on Monday to Thursday 8:00AM EST to 6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. D./  
Examiner, Art Unit 1793

/Steven Bos/  
Primary Examiner, Art Unit 1793